

BIOSENSORS FROM CONDUCTIVE POLYMER TRANSDUCERS AND SOL-GEL ENCAPSULATED BIOINDICATOR MOLECULES

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Biosensors derived from the coupling of conductive polymer-based transducers with sol-gel encapsulated bioindicator molecules have been developed. Glucose oxidase was immobilized in a silica matrix prepared by the sol-gel technique along with derivatives of polyaniline or polythiophene detected glucose in an aqueous solution by monitoring the change in conductivity of the device prepared on interdigitated electrodes. Similarly, substituting acetylcholinesterase in a comparable configuration resulted in the detection of acetylcholinesterase inhibitors (i.e., malathion and parathion) in air in the parts-per-billion regime. This is the first example of sensors for the detection of biologically active species derived from the detection by sol-gel encapsulated moieties with transduction being provided by conductive polymers.